

## DEFINITIONS AND SPECIAL INSTRUCTIONS

**1. Scope of survey**

This survey covers all United States companies engaged in the manufacture of new and remanufactured industrial type metal cutting and metal forming types of metalworking machinery, including numerical control type (Sections I and II). Rebuilt machines are not collected on this survey.

**2. Figures to be reported**

Companies with more than one establishment manufacturing the products covered by this survey are requested to complete a separate report form for each location. If you have not received a separate form for each of your establishments, call the contact shown on the report form or write to the U.S. Census Bureau for additional forms.

**QUANTITY AND VALUE OF SHIPMENTS**

The figures on quantity and value of shipment should include the physical shipments of all products sold, transferred to other establishments within your company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Assign shipments to your own branches the same value as comparable sales to unaffiliated customers, i.e., the value includes an appropriate allocation of company overhead and profit. Do not include in shipments products bought and resold without further manufacture.

**VALUE OF EXPORT SHIPMENTS**

For purposes of this report, domestic includes shipments to destinations within the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands, as well as to the U.S. Armed Forces abroad for their own use. All other shipments are exports. Report the value of export shipments by type of machine.

**VALUE OF UNFILLED ORDERS**

Report the dollar value of orders received (for domestic and export) which have not passed through your sales accounts at the end of each quarter. Unfilled orders at the end of the quarter are equal to unfilled orders at the beginning of the quarter, plus net new orders received during the quarter, minus net sales.

**BY VALUE OF MACHINE**

Separate machines which are valued at less than \$3,025 each from machines valued at \$3,025 or more.

**EXAMPLE:**

Report all drilling machines valued at less than \$3,025 each with item code 1205, "All drilling machines valued under \$3,025 each."

Report drilling machines valued at \$3,025 or more each by the specific type of machine designated under item codes 1215 through 1265.

See Reference List, page 3. Do not combine machines valued at less than \$3,025 with machines valued at \$3,025 or more.

**SHIPMENTS OF MACHINES EQUIPPED WITH NUMERICAL CONTROLS (NC)**

In addition to including the shipments of metalworking machines equipped with numerical controls with total machines shipped, also report data on numerical control type machines separately by type of control in columns 4 and 5 immediately following the total for each type of machine. The value of machine tools equipped with numerical controls should include the value of the controls.

**LEASED MACHINES**

For products leased or rented by your company, report the number and estimated values. The estimate should approximate the value of the products sold outright. If no such prices exist, base the value on the assessment placed on these items for tax, insurance, or similar purposes.

**SUBCONTRACT WORK**

Include in the report complete products manufactured for you by others on a subcontract basis. Exclude complete machines produced by you for others on a subcontract basis, unless manufactured for an affiliated company.

**IMPORTED OR ASSEMBLED COMPONENTS**

*Do not report on this survey if:*

- a.** The products you shipped were imported complete or essentially complete.
- b.** The products you shipped were imported as subassemblies purchased and not machined further or large parts which required minimal assembly with hand tools and no metalworking.

*Report on this survey if:*

- a.** Parts for your products were imported and the assembly and fabrication consisted of metal working or further machining.
- b.** Your establishment possesses the complete product design and performs in-house machining.

### 3. Definitions

#### MACHINE TYPES

*Metal cutting type machine tools* — These are defined as new, power driven, complete machine tools, not supported in the hands of an operator when in use. They are used for removing metal in the form of chips. Also included are honing machines, lapping machines, grinders, and machines which cut using electrical and laser techniques.

*Exclude* small, low-priced, machine tools of light construction such as lathes; drilling, grinding, and milling machines; and polishing and buffing machines designed primarily for home workshops, etc. Also exclude all woodworking or primarily woodworking type machines.

*Metal forming type machine tools* — These are defined as new, power driven, complete machine tools, not supported in the hands of an operator when in use. They are used to press, forge, emboss, hammer, extrude, blank, spin, shear, die cast, or bend metal.

#### ALL OTHER" CLASSIFICATIONS

The last item of most major product categories is an "all other" or "miscellaneous" group. Whenever possible, classify your products under the more specific heading which most nearly describes them. Classify them as "all other" only when a more specific description does not apply. Describe the products that you classify as "all other" in sufficient detail to permit identification. This may be done on a separate sheet of paper.

#### TYPES OF NUMERICALLY CONTROLLED MACHINES

*Positioning* — These are defined as machines equipped with "positioning" numerical control systems activated by direct data input (DNC), punched tape, punched cards, magnetic tape, cassette, or manual data input (MDI).

Report in this group all machines that have been equipped with control systems in which point-to-point positioning and cutting or forming (regardless of the number of movement

"axes" or auxiliary functions) are controlled automatically by means of numerical programs inserted into the systems.

Classify as "continuous path," machines equipped with a control system that permits "positioning" and "continuous path" operations.

*Continuous path or computer numerical control* — These are defined as machines equipped with "continuous path" numerical program control systems activated by direct data input (CNC), e.g., punched tape, punched cards, magnetic tape, cassette, or manual data input (MDI).

Report in this group all machines equipped with control systems in which, in addition to point-to-point positioning, the path of cutting is also automatically controlled by means of numerical programs inserted into the systems.

Classify as "continuous path," machines equipped with a control system that permits "positioning" and "continuous path" operations.

*Digital readout systems including dial or plugboard* — These are defined as machines equipped with digital readout systems or dial or plugboard type of prerecorded motion programs control systems.

Report in this group all machines equipped with control systems in which "positioning" or "continuous path" are automatically commanded by numerical programs fed into the system by an operator through dials, plugs, switches, or any other numerical method.

#### REMANUFACTURED MACHINE TOOLS

The basic machine carcass is reused with most of the iron retained. All possible modern improvements are incorporated. Ball screws and servo drives replace gear boxes and lead screws. Headstocks are driven by AC vector drive motors, and gears and range changes are reduced or eliminated. Position feedback may be added, as may CNC or PC controls. All of the electrics are replaced. The end product is superior to the original product when it left the factory as new.

**4. Comparability**

If you also report in the Annual Survey of Manufactures (Form MA-10000), the sum of values for item codes shown in column (a) should correspond to the dollar values reported under product class codes indicated in column (b) below:

Current Industrial Reports (Form MQ333W)	Annual Survey of Manufactures
Item code (a)	Product class code (b)
1110 through 1265	333512A pt
1991	3335121 pt
2010 through 2740	3335122
2801 through 2811	3335123
2920 through 3102	
3309 through 3675	3335124
3721 through 3736	3335127
3821 through 3825	3335128
3840 through 4630	3335129
5009 through 5270	3335131
5409 through 6305	3335133
6405 through 7173	3335135
4700	3335126
7200	3335137

pt = Part

**REFERENCE LIST**

FORM <b>MQ333W</b>		
<b>METALWORKING MACHINERY</b>		
Product code	Item code	Item description
		<b>Section I – METAL CUTTING TYPE MACHINE TOOLS</b>
		<b>BORING MACHINES (excluding Machining Centers) and DRILLING MACHINES (excluding Machining Centers)</b>
333512A101	<b>1110</b>	<b>All boring machines valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more, including laser type</b>
333512A103	<b>1125</b>	Horizontal boring, drilling, and milling machines. Includes floor, table and rail mounted, and all other boring machines (except boring lathes)
333512A105	<b>1140</b>	Precision and jig boring machines, including horizontal and vertical boring machines
333512A111	<b>1205</b>	<b>All drilling machines valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more, including laser type</b>
333512A113	<b>1215</b>	Vertical – (upright) drilling machines, including plain-upright and heavy duty
333512A117	<b>1235</b>	Deep hole drilling machines
		Multiple spindle drilling machines (cluster of spindles driven from one central power unit)
333512A119	<b>1245</b>	Adjustable joint and fixed center types
333512A121	<b>1255</b>	All other automatic multiple spindle drilling machines, including indexing turret head (fixed column and table)
333512A123	<b>1265</b>	All other drilling machines, n.e.c., (including sensitive, vertical n.e.c. and radial)
XXX	<b>1295</b>	<b>Total boring and drilling machines (<i>Sum of item codes 1110–1265</i>)</b>
		<b>GEAR CUTTING MACHINES, including laser type</b>
3335121100	<b>1991</b>	Gear cutting machines includes: gear hobbers, shapers, teeth finishing, bevel gear generators, and all other gear cutting machines

**REFERENCE LIST — Continued**

FORM **MQ333W**

Product code	Item code	Item description
		<b>Section I — METAL CUTTING TYPE MACHINE TOOLS — Continued</b>
		<b>GRINDING, POLISHING, BUFFING, HONING, AND LAPPING MACHINERY (except gear-tooth grinding, lapping, polishing, honing, and buffing machines)</b>
3335122101	<b>2010</b>	<b>All grinding, polishing, buffing, honing, and lapping machines valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more</b>
		External cylindrical grinding machines
3335122108	<b>2021</b>	Plain and universal, including angular wheel types
3335122116	<b>2075</b>	Roll, chucking, centerless, and other external cylindrical grinding machines
3335122120	<b>2100</b>	Internal cylindrical grinding machines
3335122122	<b>2146</b>	Surface grinding machines
3335122136	<b>2225</b>	All other disc grinders, bench, floor, snag, double spindle grinders, and abrasive belt grinders
3335122142	<b>2328</b>	Tool, cutter, and drill point grinding machines (including universal and special)
3335122151	<b>2430</b>	All other grinding machines, n.e.c., including planer type, thread grinding and deburring machines
		Honing and lapping machines except gear-tooth honing and lapping
3335122156	<b>2530</b>	Internal, including combination bore-hone and external (except flat surface lapping machines)
3335122161	<b>2579</b>	Flat surface lapping machines, except gear lapping
3335122166	<b>2740</b>	Polishing and buffing machines including speed lathes and multi-station type
XXX	<b>2790</b>	<b>Total grinding, polishing, buffing, honing, and lapping machines, (except gear-tooth, grinding, lapping, polishing, and buffing machines) (Sum of item codes 2010–2740)</b>

**REFERENCE LIST — Continued**

FORM <b>MQ333W</b>		
Product code	Item code	Item description
		<b>Section I — METAL CUTTING TYPE MACHINE TOOLS — Continued</b>
		<b>LATHES (TURNING MACHINES)</b>
3335123131	<b>2801</b>	<b>All lathes valued under \$3,025 each</b>  <b>Machines valued at \$3,025 each or more</b>
		<b>NUMERICALLY CONTROLLED TURNING MACHINES</b>
		<b>Horizontal Spindle</b>
3335123101	<b>2802</b>	All multiple spindle NC turning machines, except those with opposing powered subspindles (classified as single spindle)  <b>Single spindle:</b>  <b>PLEASE NOTE:</b> <i>Each machine may not conform to all the criteria of any one subgroup. The criteria are ranked in order of importance to help indicate the proper subgroup classification. Determine horsepower by name plate listing.</i>
3335123107	<b>2807</b>	Chuck size: Less than 10" Horsepower: 25 and under Swing: 18" and under Spindle nose: A-8" and under
3335123116	<b>2809</b>	Chuck size: 10" to less than 15" Horsepower: 25–50 Swing: 18"–25" Spindle nose: A-8"–11"
3335123121	<b>2811</b>	Chuck size: 15" and over Horsepower: 50 and over Swing: 25" and over Spindle nose: 15" and over
XXX	<b>2815</b>	<b>Total horizontal NC turning machines (Sum of item codes 2802–2811)</b>
		<b>Vertical Spindle</b>
3335123126	<b>2920</b>	Vertical spindle lathes, boring and turning machines
3335123134	<b>3102</b>	<b>NON-NUMERICALLY CONTROLLED TURNING MACHINES VALUED AT \$3,025 EACH OR MORE</b>

**REFERENCE LIST — Continued**

FORM <b>MQ333W</b>		
Product code	Item code	Item description
		<b>Section I — METAL CUTTING TYPE MACHINE TOOLS — Continued</b>
		<b>MILLING MACHINES, excluding machining centers:</b>
3335124101	<b>3309</b>	<b>All milling machines valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more:</b>
3335124106	<b>3405</b>	General-purpose type knee milling machines
3335124111	<b>3470</b>	Automatic single spindle, multiple spindle and special-purpose machines
3335124121	<b>3675</b>	All other milling machines, n.e.c., including planer type and thread milling machines
XXX	<b>3691</b>	<b>Total milling machines (<i>Sum of item codes 3309–3675</i>)</b>
		<b>OTHER METAL CUTTING MACHINE TOOLS</b>
		<b>Machining centers (multi-function NC machines):</b>
3335127101	<b>3721</b>	Drill, mill, bore — VERTICAL (automatic tool change):
3335127106	<b>3722</b>	"Y" axis travel less than 20 inches
3335127111	<b>3723</b>	"Y" axis travel 20 inches through 26 inches
		"Y" axis travel over 26 inches
3335127112	<b>3724</b>	Drill, mill, bore — HORIZONTAL (automatic tool change):
3335127113	<b>3725</b>	Under 500mm pallet
3335127114	<b>3726</b>	500mm-800mm pallet
		Over 800mm pallet
3335127146	<b>3736</b>	All other machining centers, including special machining centers, special adapting of standard machining centers, and machining centers with indexing turret
XXX	<b>3737</b>	<b>Total machining centers (<i>Sum of item codes 3721–3736</i>)</b>
		<b>Machining centers (multi-function NC machines)</b>
		<b>Station type machines:</b>
3335128101	<b>3821</b>	Dial or rotary, trunnion and center column
3335128106	<b>3823</b>	Transfer (free, palletized, shuttle)
3335128111	<b>3825</b>	Other station type, n.e.c.
XXX	<b>3831</b>	<b>Total station type machines (<i>Sum of codes 3821–3825</i>)</b>

**REFERENCE LIST — Continued**

FORM **MQ333W**

Product code	Item code	Item description
		<b>Section I — METAL CUTTING TYPE MACHINE TOOLS — Continued</b>
		<b>OTHER METAL CUTTING MACHINE TOOLS — Continued</b>
3335129101	<b>3840</b>	<b>Other metal cutting machine tools, n.e.c., valued under \$3,025</b>
		<b>Machines valued at \$3,025 each or more</b>
3335129106	<b>3850</b>	Broaching machines, including internal surface, and all other broaching machines
		Sawing and cut-off machines
		Band saws
3335129122	<b>4181</b>	Vertical
3335129123	<b>4183</b>	Horizontal
3335129126	<b>4196</b>	All other sawing and cut-off machines (including contour sawing and filing)
3335129131	<b>4619</b>	Spark erosion, ultrasonic and electrolytic machines
3335129136	<b>4630</b>	Miscellaneous metal cutting machine tools (including rifling, centering, key-seating, pointing, chamfering, facing, shaving, grooving, counter-sinking, skiving, reaming, screw and nut slotting machines, threading, planers, shapers, and laser cutting machines)
XXX	<b>4691</b>	<b>Total other metal cutting machine tools (except station type and machining centers) (<i>Sum of item codes 3840–4630</i>)</b>
3335126111	<b>4700</b>	<b>REMANUFACTURED METAL CUTTING MACHINE TOOLS</b>



**REFERENCE LIST — Continued**

FORM <b>MQ333W</b>		
Product code	Item code	Item description
		<b>Section II — METAL FORMING TYPE MACHINE TOOLS</b>
		<b>PUNCHING AND SHEARING MACHINES</b>
3335131101	<b>5009</b>	<b>All punching and shearing machines valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more</b>
		POWER OPERATED ONLY
3335131106	<b>5019</b>	Punches, including combination punching and shearing machines
3335131111	<b>5025</b>	Punching machines fixed position and two axes positioning table
		Plate shearing machines (squaring, slitting, etc.)
3335131116	<b>5031</b>	Mechanical
3335131121	<b>5032</b>	Hydraulic
3335131126	<b>5085</b>	Other power operated punching and shearing machines
		<b>BENDING AND FORMING MACHINES — Power operated</b>
3335131131	<b>5109</b>	<b>All bending and forming machines valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more</b>
3335131136	<b>5112</b>	Press brakes
3335131142	<b>5117</b>	Roll bending machines, including sheet, plate, angles, bars, shapes, and tubes
3335131151	<b>5220</b>	Rotary bending and forming machines, including rotary head
3335131161	<b>5270</b>	Other bending and forming machines, including folders and slide bending machines
XXX	<b>5291</b>	<b>Total punching, shearing, bending, and forming machines</b> <b>(Sum of item codes 5009–5270)</b>
		<b>PRESSES (except forging presses and die stamping presses)</b>
3335133101	<b>5409</b>	<b>All presses valued under \$3,025 each</b>
		<b>Machines valued at \$3,025 each or more</b>
		MECHANICAL PRESSES
		Gap or C-frame
3335133106	<b>5420</b>	50 tons and under
3335133113	<b>5432</b>	Over 50 tons

**REFERENCE LIST — Continued**

<b>FORM MQ333W</b>		
<b>Product code</b>	<b>Item code</b>	<b>Item description</b>
		<b>Section II – METAL FORMING TYPE MACHINE TOOLS — Continued</b>
		<b>MECHANICAL PRESSES — Continued</b>
		Vertical straight sided and arch frame Exclude knuckle joint. Include cam and crank.
		Single action
3335133121	<b>5460</b>	Single point
		Two point
3335133128	<b>5535</b>	150 tons and under
3335133133	<b>5565</b>	Over 150 tons
3335133136	<b>5830</b>	Automatic presses, strip or coil fed
3335133141	<b>5861</b>	Other mechanical presses, including end wheel type, bulldozer, double and triple action, and transfer fed presses, four point and knuckle joint (excluding automated lines of standard equipment)
		<b>HYDRAULIC PRESSES (metalworking only)</b>
		Vertical single action, all tonnages
3335133146	<b>5961</b>	Housing or straight side type
3335133151	<b>5962</b>	Column type (open rod)
		Gap or C-frame
3335133156	<b>6131</b>	15 tons and under
3335133161	<b>6132</b>	16 tons–35 tons
3335133166	<b>6133</b>	Over 35 tons
3335133171	<b>6305</b>	Other hydraulic and pneumatic presses, including horizontal
XXX	<b>6321</b>	<b>Total presses, except forging (<i>Sum of item codes 5409–6305</i>)</b>
3335135176	<b>6405</b>	<b>Forging machines (including forging presses and die stamping presses)</b>
		<b>ALL OTHER METAL FORMING TYPE MACHINE TOOLS</b>
3335135101	<b>6540</b>	<b>All other metal forming type machine tools valued under \$3,025 each</b>

**REFERENCE LIST — Continued**

FORM **MQ333W**

Product code	Item code	Item description
		<b>Section II – METAL FORMING TYPE MACHINE TOOLS — Continued</b>
		<b>Machines valued at \$3,025 each or more</b>
3335135106	<b>6610</b>	Thread rolling machinery
3335135111	<b>6615</b>	Metal container-making machinery
3335135116	<b>6620</b>	Die casting machines
3335135121	<b>6779</b>	Riveting machines, except hand held portable types
3335135126	<b>7173</b>	All other metal forming type machine tools, not elsewhere classified
XXX	<b>7191</b>	<b>Total all other metal forming type machine tools (<i>Sum of item codes 6540–7173</i>)</b>
3335137121	<b>7200</b>	<b>REMANUFACTURED METAL FORMING MACHINE TOOLS</b>

**NOTES:**